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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/782,166

02/14/2001

Shigeo Tagami

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8338

7590

10/29/2004

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EXAMINER

PHU, PHUONG M

ART UNIT

PAPER NUMBER

2631

DATE MAILED: 10/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/782,166	TAGAMI, SHIGEO	
	Examiner	Art Unit	
	Phuong Phu	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10 is/are allowed.
- 6) ☒ Claim(s) 12-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 08/24/04.

Information Disclosure Statement

2. Regarding to the reference "AD/DA Converter and Digital Filter", Yoshio Yamazaki, listed in the IDS filed on 12/16/03, the examiner did not receive the submission of a concise explanation of the relevance of this reference, as mentioned by applicant in the REMARKS of the Amendment filed on 8/24/04. The applicant is now requested to re-submit said concise explanation (in an English version) of the relevance of this reference.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 12-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites the limitation "said integrators" on line 3. This limitation is lack of antecedent basis.

Claim 15 recites the limitation "said $\Delta\Sigma$ modulator receives an input, an effective order of said effective orders being the number of said integrators participating in the modulation of said input". This limitation renders the claim vague whether "effective order of said effective orders ... said input" is modified for "an input" or is another element that "said $\Delta\Sigma$ modulator" receives besides said "an input". It appears that --and-- should be inserted between "an input" and "an effective order".

Claim 16 recites the limitation “a first multiplier, a first control factor supplied from said order variation means being received by **first multiplier** to generate a first multiplication output. said first multiplier multiplying said input by said first control factor to generate said first multiplication output”. This limitation renders the claim vague whether “first multiplier” in the limitation regards to “a first multiplier” previously recited on line 2. As illustrated by figure 4, “first multiplier” in the limitation is suggested to be changed to “said first multiplier”.

Claim 16 recites the limitation “a second multiplier, a second control factor supplied from said order variation means being received by **first multiplier** to generate a second multiplication output, said second multiplier multiplying an output from another integrator of said plurality of said integrators by said second control factor to generate said second multiplication output”. This limitation renders the claim vague whether “first multiplier” in the limitation regards to “a first multiplier” previously recited on line 2. As illustrated by figure 4, “first multiplier” in the limitation is suggested be changed to “second multiplier”.

Claims, dependent on the above claims, are therefore also rejected with the above reasons.

5. Claims 12-23 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

Claim 12 omits the functional/structural/connectional interrelationship of elements “an integrator”, “plurality of said integrators”, “fraction eliminating means” and “order variation means” to one another in order to make the claimed modulator as a complete

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operative/connective device. Said omission of functional/structural/connectional interrelationship renders to the claims vague in showing:

- (i) how these elements are connected to one another with respect to their inputs/outputs;
- (ii) how “a fraction” remaining in “said integrator” is formed and whether the “fraction” is a fraction of a signal or a fraction of some mathematical substance;
- (iii) what is the “effective orders” and how it is formed in the relationship with “said integrators”; and/or
- (iv) how “connection” with “said plurality of said integrator” is formed for increasing “effective orders”.

Claims, dependent on the above claim, are therefore also rejected with the above reasons.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 12, 13 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Karema et al (5,248,972), previously cited.

As per claim 12, see figure 4, and col. 5, line 7 to col. 6, line 10, Karema et al discloses a $\Delta\Sigma$ modulator comprising:

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an integrator (H1, H2) of a plurality of integrators (H1, ..., Hn) having fraction elimination means (a1, 21₂) for eliminating a fraction signal (split from (H1)) in said integrator by subtraction means (21₂), and

order variation means (41, 42) for varying effective orders increasing due to connection with said plurality of said integrators (see col. 5, lines 37-51).

As per claim 13, in Karema et al, the fraction of the signal outputted from means (H1), that the fraction signal is split from means (H1) to be inputted to means (a1, 21₂), is inherently smaller than 1.

As per claim 15, Karema et al discloses that said $\Delta\Sigma$ modulator receives an input (IN) and a representation signal (OUT) of effective order of said effective orders being the number of integrators participating in the modulation of said input (see figure 4, and col. 5, lines 7-53).

Allowable Subject Matter

8. Claims 1-10 are allowed.

Response to Arguments

9. Applicant's arguments filed on 08/24/04 have been fully considered but they are not, in part, persuasive.

The objection to the Drawings is now withdrawn since the Drawings were amended to overcome the objection.

The applicant's arguments with respect to the rejections to claim 12 are fully considered and the rejections are now withdrawn. However, upon further considerations, claim 12, after being amended, are still rejected with reasons set forth above in this Office Action.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 571-272-3009. The examiner can normally be reached on M-F (6:30-2:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phuong Phu

Phuong Phu
10/26/04

PHUONG PHU
PRIMARY EXAMINER

Phuong Phu
Primary Examiner
Art Unit 2631